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ABSTRACT

Reduction planning is a rational process that requires a comprehensive program and a firm grasp on current operating practices and costs. It is planning for reducing personnel positions, lowering levels of service, and deferring maintenance. This paper explores three important issues in reduction planning: the basic concepts of reduction planning, the comprehensive actions necessary in preparation for reduction planning and the alternative actions for achieving reduction. Taken together these three issues set a basis for reduction planning in higher education. The effective use and management of physical resources is looked at from the view of an overall availability of resources for an institution. Specific references are made to activities at Syracuse University that are under the responsibility of the author. (Author/JMF)

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Reduction Planning: Managing in an Era of Declining Resources

by Harvey H. Kaiser

Managing facilities under conditions of stability and decline is a concept foreign to a generation of administrators trained and experienced in an era of unparalleled growth in higher education. Yet, that is the prospect facing administrators in education for the remainder of this century. Unless drastic intervention occurs through changes in social attitudes and public policy, higher education will not represent a "growth" industry in the foreseeable future.

There are a considerable number of facility administrators who have been successfully adapting to factors which require delivery of services with declining resources. There have been and continue to be alert and capable plant managers and administrators with a history of several decades of conserving and implementing highly innovative programming. However, fresh ground must be broken in the field of reduction planning.

Information has been shared among facility administrators for many years regarding highly innovative programs, including: (1) sophisticated accounting and scheduling systems; (2) improvements in operating, including organizational structure and policies; (3) establishment of planned preventive maintenance programs; (4) use of innovative tools, equipment, techniques and communications systems; (5) effective use of computer and data processing systems; and (6) materials purchased. The challenge to continue adjusting to change is a long-term condition and requires more than temporary expedients.

It is sadly true that the first step usually taken to maintain the fiscal health of institutions is to reduce operating expenditures for physical facilities, and that making adjustments to "central academic purposes" is the last step. Because of the opportunity to achieve rapid results and visible evidence of a posture of austerity, the staff of hourly workers and expenditures for maintenance operations are the first to feel the burden of fiscal problems. Actually, in making reductions, one should examine all parts of an enterprise simultaneously. Rather than representing position action these negative measures of reaction are often hasty and result in long-term deleterious effects on the institution.

In the future the primary difficulty for facility administrators will be to adapt to new questions to which the growth-oriented answers of past planning will be irrelevant. Also, reduction planning will sometimes force administrators into *triage* decisions, thinking about who or what must be sacrificed so that other populations and functions of the institution may be preserved.

As a step in this direction this paper will explore three important issues: the basic concepts of reduction planning, the comprehensive actions necessary in preparation for reduction planning, and the alternative actions for achieving reduction. Taken together these three issues set a basis for reduction planning in higher education. The effective use and management of physical resources will be looked at from the view of an overall availability of resources for an institution. Specific references will be made to activities at Syracuse University which are under the responsibility of the author.

A New Concept: Reduction Planning

What is reduction planning? As with most complex tasks, it is easier to describe what it is not. For example, it is not indiscriminate cutbacks of janitorial, grounds or maintenance staff; it is not the cessation of material purchases; it is not the reflexive response: "We can't do it because we don't have the money." It can be said, however, that reduction planning is a rational process, one that requires a comprehensive program and a firm grasp on current operating practices and costs. Unavoidably, it is planning for reducing personnel positions, lowering levels of service, and deferring maintenance.

Reduction planning requires strong management leadership and application of management principles. Facilities management is a comprehensive term used to describe the approach developed at Syracuse University and one which can be applied in reduction planning. It relies strongly on

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increasing productivity in controlled maintenance, performed in a systematic framework of budgeting, execution of work, and fiscal controls. It can function only when it is understood and is supported by senior institutional management.

Climate For Reduction Planning

Budget reductions can originate from sources outside or inside the institution, but the end result is the same: a smaller fiscal allocation than anticipated or considered necessary. Attention must be paid to staff size and salaries, purchasing of materials, delivery of services, and preservation of plant.

The origin of need for reduction sets a climate that influences how decisions are made and which priorities are selected. Because of the intermingling of public funds for both public and private institutions a change or changes in public policy affects all sectors of higher education. The public institution has different pressures and requirements for accountability than its private counterpart. For example, a change in allocation on a per-student basis from a legislative body, or a mandatory level of teaching services to be provided in a public institution, creates different options than the imposition of a change in student subsidy for the private school.

A climate of reduction in which members of the college or university community are aware that the reduction is imposed entirely by outside sources, such as federal or state policy, lessens the need for administrators to defend their administrative competencies. The question of whether the need for reduction was due to fiscal mismanagement is avoided by public knowledge of the problem's source.

The climate is somewhat different when responsibilities for fiscal management are primarily in the hands of the institution's administration. Income generation in the private institution becomes extremely difficult to forecast or achieve in depressed economic times. Determination of tuition income, government subsidy, financial aid available to students, and benevolence from alumni and other donors is difficult to predict during soaring inflation and slow growth in the national economy. A nagging doubt exists in the minds of members of the institution's community: are the difficulties real or imagined? Were they the result of incompetent management or were they the result of external forces?

The complexities of budgeting and budget management of multi-million dollar educational corporations have not been universally understood or until lately pursued with much interest by the academic community. In many institutions weak fiscal management has created problems creating near or actual bankruptcy. It is no wonder that the budget difficulties of colleges and universities are often attributed to incompetent management and not to real fiscal problems. The climate of reduction planning in higher education is fraught with doubt, fears, and recriminations because of a lack of understanding of causes by the academic community. It should be clear that as the reduction requirements are expressed there exists no objective method for judging priorities among different programs or activities in higher education. This must be done in a political context.

Vying for an *increased* share of resources for institutional support operations and general services (to offset inflationary trends) when overall resources are being reduced may seem logical to the manager of physical resources, but it will not be popularly accepted when at the same time the academic programs of the institution must be curtailed. The management of physical resources often receives a lower priority than those functions of the institution in academic and student services areas usually considered more basic. The history professor has little tolerance for reduced library operating hours but accepts the reduction of grounds staff to meet budget needs. The long-term effect of deferring maintenance is difficult to explain to members of the academic community when they are focusing on next year's faculty salary increases.

. . . reduction planning is a rational process, one that requires a comprehensive program and a firm grasp on current operating practices and costs.

The attitude of academics toward maintenance of buildings usually results in a low order of priority for budget allocations to facilities management. The result of this attitude is that reduction planning starts for the facilities manager when it is apparent that he must hold his operations within the current year's budget, or even address himself to percentage reductions of 5, 10, or 25 percent. And this must be with appropriate regard for personnel, materials, and services rendered.

Not to be overlooked in the climate that creates reduction planning is the importance of accountability of the unit responsible for facilities management. The selection of priorities for reduction must be done on a rational basis with the long-term effects of selected choices readily explainable. The concepts of reduction and the sequence of steps to be followed in reduction depend strongly on the facilities management organization, operating procedures, and fiscal controls.

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Concepts Of Reductions

Several philosophies of reduction planning have been observed in higher education. Different concepts mirror the general level of administrative sophistication at an institution. The skills or styles of the administrative leaders of facilities management can be grouped in broad categories.

The first may be called the "Chicken Little" school. This style is symbolized by alternately looking skyward, running around in ever-decreasing circles, and covering one's head. The words ". . . oh my, oh my the sky is falling" are usually heard from this manager.

A second leader closely follows the Queen of Hearts in *Through The Looking Glass:* "It takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run twice as fast as that!"

Another leader may be described as the nice-guy type. He will never say "no" to a request for service, never exercise authority. He can usually be heard by his whine or sniveling sound. His actions bear a strong resemblance to a deck steward rearranging chairs on the *Titanic.*

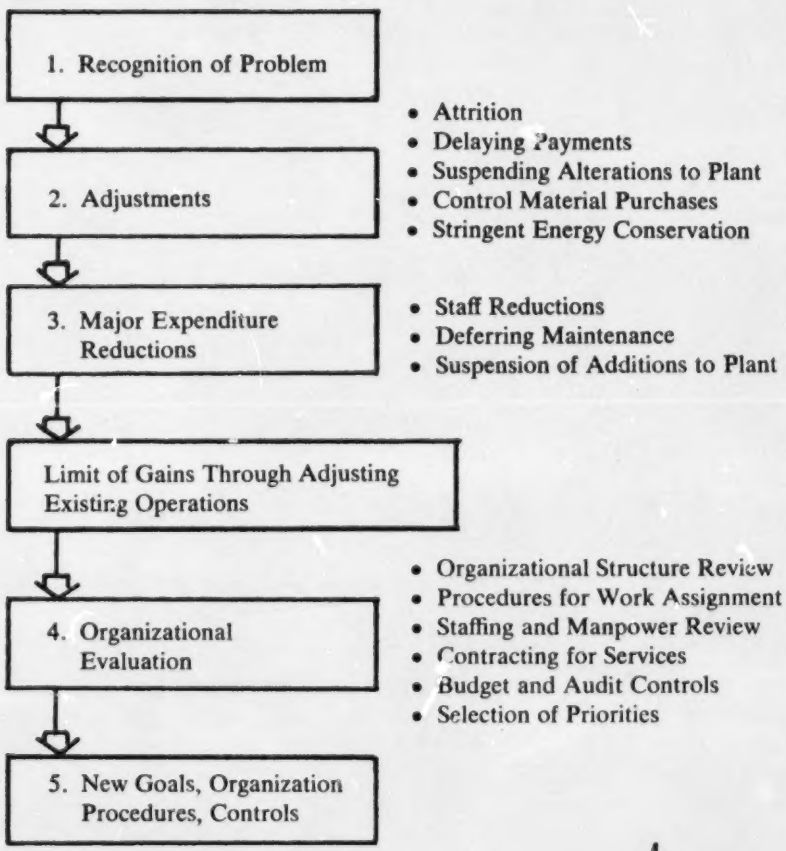
A fourth leader may be referred to as a mobile manager. His reputation never quite catches up with him but his successors can identify him. A job turnover usually occurs just prior to the end of a budget year or as a new senior administrator is taking over. He is always about to streamline the operation and become systematic, but a field emergency manages to divert his attention.

There is also the very vocal "let's run-it-like-a-business" type of administrator. Assuming that "if we were in this as a business things would be a lot tighter," this manager sounds good to everyone but the people who do the work for him. He knows nothing about higher education but thinks that if "profs" worked a full day once in a while "things would start to shape up." He can usually be found holding onto the end of unanswered telephones when looking for emergency help on a weekend.

Finally, there is the manager. His traits are difficult to describe because his species is so elusive. He is organized; exercises strong leadership; has the respect of his seniors and subordinates; and is a politician, an accountant, an architect and engineer, and a practical mechanic.

The pattern that managers follow when faced with a problem of reduction planning does not resemble that of any of the previous characters just described. The method of addressing the problem is a familiar one and generally proceeds as shown in Figure 1.

Figure 1: Reduction Concepts


1. Recognition of Problem
2. Adjustments
• Attrition
• Delaying Payments
• Suspending Alterations to Plant
• Control Material Purchases
• Stringent Energy Conservation
3. Major Expenditure Reductions
• Staff Reductions
• Deferring Maintenance
• Suspension of Additions to Plant
Limit of Gains Through Adjusting Existing Operations
4. Organizational Evaluation
• Organizational Structure Review
• Procedures for Work Assignment
• Staffing and Manpower Review
• Contracting for Services
• Budget and Audit Controls
• Selection of Priorities
5. New Goals, Organization Procedures, Controls

Recognition of problem. Evidence that a budget deficit will occur is apparent from operational reports, or reductions will be necessary because of overall institutional problems. The need for a reduction of expenses dictates selection of one of several alternatives including staff reduction, reduced purchases of materials or services, or termination of contracts with vendors for services.

Adjustments. Management decisions are made to minimize effects on service and provide rapid recoveries in normal operations if the fiscal situation reverses. Steps include non-rehiring and achieving gains through attrition, "floating" some payments, suspending programs for alterations to plant, and introducing tight control on all the material purchases.

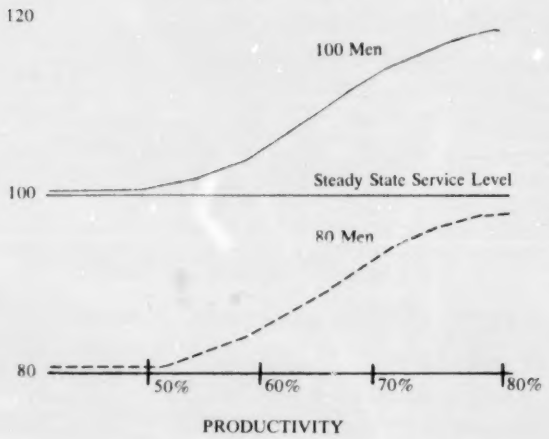
Major Expenditures Reductions. This requires more drastic measures, usually representing decremental changes of several steps. Preservation of plant may be directly affected. Measures include staff lay-offs, deferring of maintenance, suspension of capital projects, and stringent energy conservation steps.

Organizational Evaluation. This important step, too often left until last, should be the first step as the prospect of reduction planning becomes evident. Accom-

plished either by internal decisions of the facilities management organization or imposed by other administrative sources, the process of evaluation starts with organizational evaluation and with a review of current operations in order to set realistic goals. An outside management consultant can be helpful here. Almost simultaneously, several other steps should be taken: an evaluation of the organizational structure and a manpower study; a review of the budget process to determine whether resources are allocated effectively and a thorough control and audit system exists; a review of the methods of service delivery, such as centralized, decentralized, or contract: and a scheduled set of manageable targets for achievable goals be established.

Two key concepts of reduction planning are *selection of priorities* and *increased productivity*. After the difficult decisions of allocating resources are made, ways must be found to do more work with fewer resources. Under a steady or slow growth economy, a manager attempts to get a continuous increase in activity with a constant work force. Under conditions of a declining economy a manager must maintain constant levels of activity with a reduced work force. Figure 2 illustrates how staff reduction affects goals for increased productivity. If a staff of one hundred, with a goal of 20 percent increased productivity, were reduced to eighty, an increase of 25 percent productivity would be required just to maintain constant levels of service.

Figure 2: Productivity Increases



Material explaining components of facilities management is available in standard texts on maintenance work. However, to gain an increase in productivity all of these components must be looked at from a comprehensive point of view. A work order system without a good management reporting system is inefficient; sound budgeting is wasteful if it is done in unrealistic relationship to available resources; competent supervisors cannot perform if operating procedures are undefined. It can be estimated that the typical facilities management group in higher education, from the medium college to the large university, can increase productivity *20 to 30 percent* through a comprehensive program culminating in controlled maintenance. The essential components of a controlled maintenance program are described in greater detail below. However, such a program should not be looked on as the sole component of reduction planning.

Reduction Approaches

Reduction of budgets for managing and operating physical resources requires the unavoidable task of selecting priorities among alternatives: choices of lowered levels of service, deferral of maintenance, and elimination of alterations and additions to plant.

Budgets for operating and maintaining Syracuse University's physical plant are based on several basic principles of selecting priorities:

1. Balanced operating budget.
2. Concern for the long-term future of the physical resources of the university.
3. The necessity to plan comprehensively and for several years rather than one at a time.
4. The high priority placed on curtailing supporting services at a time when failure to do so would require—within the constraints of any given deficit level—more severe reduction in basic educational programs.

A word on "no-growth" or stable budgets may be helpful here. Inflationary increases in costs of labor, materials, and utilities have exceeded consumer price index rises since 1970. Tuition and fee increases have not kept pace with either consumer price or operating cost increases. The result is that the choice made by administrators invariably is to reduce budgets for operating and managing facilities so as to maintain appropriate funding levels for academic functions of the institution. "No-growth" in facilities management budgeting is a reduction because of increased costs; an actual reduction below previous funding levels is compounded by differences created by inflation. In the first case a zero budget increase may effectively act as an 8 to 10 percent reduction. In the second case a 10 percent budget reduction can effectively be 18 to 20 percent.

In viewing priorities for planning operations and maintenance under a reduced budget the facilities manager and senior administrators will conclude with a recommended level of budgeting. The choices for priority selection at Syracuse University have fallen in three areas:

Staffing and Services. Reductions in expenditures for plant operations and maintenance must be addressed to the larger component, service and personnel. Exclusive of utilities, personnel costs can vary from 60 to 80 percent of the total budget. If productivity increases have been

initiated and substantial savings accrued, choices for priority reductions in services become more difficult. One area to be regularly reviewed is the ratio of administrative or supervisory personnel to labor-performing maintenance services. Reductions in nonmaintenance personnel should be proportional to overall staff changes.

The functions of the plant operations and maintenance staff are to operate, maintain, and preserve an institution's physical plant. A first step in planning priorities is to reduce all levels of service in these three categories, with a commensurate reduction in material usage. Specific examples are the "stretching out" of custodial schedules to clean spaces less frequently, or a reduction in grounds cleanup and maintenance. What this means is not a "speed up;" rather the amount of work which was done at earlier staffing levels simply would not be done thereafter.

Unavoidably, reduction means cutbacks in staff through attrition or terminations and lowered levels of material purchases. There cannot be formulas prepared for the numbers or skills of the staff of physical plant because of the different ages, locations, and conditions of components of the physical plant. One way of approaching priority selection of staff reductions is the budgeting method. The adoption of the NACUBO-APPA[1] budget chart of accounts is a good first step. By breaking them down into major categories, personnel and material expenditures can be analyzed by functions performed and a needs budget prepared to match available resources. Syracuse University has adopted this tool with success in increasing productivity and in providing guidance in reduction planning. This budgeting format has allowed us to closely examine and control costs for five major areas:

It can be estimated that the typical facilities management group in higher education, from the medium college to the large university, can increase productivity *20 to 30 percent* through a comprehensive program culminating in controlled maintenance.

1. Administrative and supervisory costs.
2. Building maintenance distributed among preventive maintenance, emergency work, and short-duration tasks.
3. Custodial operations.
4. Grounds maintenance.
5. Alterations and minor additions to plant.

A guide in selecting priorities for institutional staff performance is to retain staff for those tasks which require preventive maintenance, or require emergency service to preserve plant. Service needs which require unique skills and expensive equipment, such as roofing replacements, garage tasks, or equipment building, should be contracted. Tasks limited by weather, such as outdoor painting, masonry work or site repairs, should not be staffed for by the institution at seasonal levels. Thorough review should be made of work which is performed cyclically because of the academic calendar. The regular procedure of shifting grounds personnel to different tasks during different seasons should also be applied to skilled maintenance personnel.

Included in organizational needs for facilities management is the facilities planning function. Depending upon the size of the institution and its pattern of additions to plant in the last decade, technical staff for inhouse planning and supervision of construction have evolved. As levels of alterations and additions to plant and maintenance staff are held at steady state or reduced, the inhouse professional staff should be reduced. A challenge here is to integrate the facilities planning staff into the regular operations and maintenance functions. Gains can be made by relieving maintenance supervisors of technical evaluation and work planning.

Space Alterations. Reductions in staff and material expenditures can be obtained by a near moratorium on alterations and improvements to existing space. Senior administrators must base decisions for budget operating expenditures on renovation projects on the basis of cost effectiveness. When functions can be consolidated to conserve energy, or yield greater utilization of staff, then a priority allocation can be considered.

Preservation of Plant. Administrators should avoid cutbacks in one important area—preservation of plant—when selecting priorities in planning for reduction in the operation of physical plant. Concern for the future health of an institution mandates that the manager of facilities refrain from offering up savings which would have the effect of allowing the fundamental physical condition of the plant to deteriorate. To do otherwise would be the most dangerous sort of false economy.

It may be preferable to select priorities among academic and staff needs to permit preservation of plant. In order to do this the senior administrators and the institution's general community should have the benefit of a long-range plan for operations. Such a plan outlines institutional policy for levels of service and preservation of plant, and provides goals for budget levels over a three- to five-year period. The first year describes a budget base reduction and the effects of this change. Subsequent years outline potential additional areas of economies and allow a rational basis for selection of priorities.

The two last items concerning reduction planning which are discussed in this paper are a comprehensive facilities management program and budgeting and budget controls. Both must develop from an essential component of reduction planning—management improvement. Without improvements in management it is unlikely that the comprehensive approach to facilities management can occur, nor can the increases in productivity that are necessary in reduction planning.

[1] The National Association of College and University Business Officers, *Administrative Service*, "3:3:2 A Classification of Accounts for Physical Plant" (Washington, D.C.: NACUBO, 1975).

Facilities Management

The program of facilities management developed at Syracuse University can provide a guide for a comprehensive approach to reduction planning. Begun in 1970 as a series of measures to conserve the university's facilities, the program has been broadened to provide effective management of facilities. At the start of the period the university board of trustees agreed to borrow almost $9 million to correct deferred maintenance needs. In the six years since then, changes have been made in organizational structure and program goals.

The ten major features of the facilities management program at Syracuse University are described below.

Physical Planning Policy. A series of policy statements concerning land area, building usage, circulation and parking, and decision making about physical facilities were prepared for review and approval by senior administrators and the board of trustees. The policies revised the overoptimistic projections of growth made in the early 1960s and developed projections to 1985 for real estate and building space. Definite conclusions were made about consolidation of university land holdings and buildings into a more compact area. A controlled and planned maintenance program which included preventive maintenance was deemed vital to the program of facilities conservation. The overall plan, prepared by administrative staff in two months, has remained in use and will be updated in 1976. A computer-based planned maintenance program was completed in about one and one-half years.

Inventory of Space and Facilities. Previously prepared inventories of university space and facilities were put together annually by manual techniques. Planning purposes and the need for timely, consistent and accurate reports for government agencies indicated that more sophisticated methods should be sought. Finally, a system of space identification was found to be essential to supporting fiscal

The selection of priorities for reduction must be done on a rational basis with the long-term effects of selected choices readily explainable.

control necessary to achieve productivity increases. A survey was made of the requirements for development of a new space inventory system and the availability of management information systems on the market. A system called INSITE, developed by the Massachusetts Institute of Technology, was installed in a three-month period and now inventories approximately 33,000 spaces in 450 buildings used for academic, administrative, residential, and other purposes.

Survey of Deferred Maintenance and Major Renovations. During the 1950s and 1960s major expansion occurred at Syracuse University in enrollment and facilities. At the same time that new buildings were being added to the campus, major maintenance work was deferred on existing buildings. The forty major academic buildings and forty major and minor residence halls built from the university's founding in 1870 were surveyed in detail for maintenance needs. Conclusions contained in this extensive feasibility study were an updating of the physical planning policy and have been refined in greater detail for separate programs of deferred maintenance and major building renovation. The original building surveys have proved to be invaluable in selecting priorities for reduction planning.

"No-growth" in facilities management budgeting is a reduction because of increased costs; an actual reduction below previous funding levels is compounded by differences created by inflation.

Deferred Maintenance. A five-year program was begun in 1970 to correct maintenance work which had previously been deferred. The program was funded by the $9 million mentioned earlier. The commitment was made with the understanding that seven major academic buildings required extensive renovation and would be funded separately, but that by 1975 the university would be maintaining facilities with a regular maintenance program. Under the deferred maintenance program building exteriors were restored with new roofs, masonry repairs, and repaired window openings. Roads and walks were rebuilt and the areas not touched by earlier building clearance or new construction were improved. Improvements to building systems were given higher priority than appearances.

Major Renovations. A survey of seven major academic buildings showed that their value as assets should be retained and their life extended from fifty to seventy-five years by major renovations. This meant complete gutting to exterior walls for one, replacement of all building systems for all, and improvements to comply with current occupancy and safety codes. A series of individual building feasibility studies showed that an increase of about 20 percent in space could be achieved through renovation. The proposals were based on cost-effective measures which included consolidation of academic programs and the subsequent elimination of marginal space, and potential staff reductions by eliminating repetition of personnel housed in several locations.

Increased Space Utilization. The allocation of space and its utilization in higher education tend to be done on a decentralized basis with registrars' or similar offices acting as clearing houses to avoid conflicts. The basic question to be asked in reduction planning is what the effect would be of eliminating a facility of the institutions' overall academic functions. The usage of space must be determined in order to establish criteria for further decisions. Such decisions affect operating costs for utilities, maintenance, custodial general services and support staff.

For example, two administrative staffs located in adjacent buildings were reduced in size and brought together in one underutilized space. Savings were realized by being able to reduce energy needs in the now occasionally occupied space; support staff duplication due to two locations was reduced; and support services such as mail, security and custodial needs were reallocated.

Major savings were achieved at Syracuse University by evaluating space which was marginally usable at the completion of construction or in disuse because of changes in programs. This kind of evaluation requires a fresh view of all space, and concentration on those areas used seldom or never. For example, the use of dining spaces for multiple purposes is common as is the encroachment on public circulation areas of office space. More imaginative uses are the conversion of a barn to a housing recreation center, and the creation of an art gallery from an unused dining hall.

Consolidation of Facilities. Construction of new facilities for higher education in the postwar period met needs for expanded enrollment and replacement of obsolete buildings. The task of reusing older buildings, often of historical significance to the continuity of the institution, were given little attention. Occasional restorations were performed but older academic buildings and structures acquired to accommodate the rapid postwar expansion were given a coat of paint and retained in use.

This situation was faced at Syracuse University at the preparation of its physical planning policy and deferred maintenance program. Six years later, there has been a reduction of almost one million square feet of space from an original inventory of more than seven million. By defining the university's geographic "limits of interest," decisions could be made to divest the university of properties remote from the main campus. A policy was also established to either improve or demolish structures which had deteriorated and presented potential financial exposure for deferred maintenance.

Consolidation of facilities and increased utilization often operate simultaneously and in the thickest atmosphere of internal campus politics. However, the gains which can be achieved by incorporating these activities into reduction planning are significant. The net results must adhere to the criteria of cost effectiveness and conformity of overall academic goals of the institution.

At Syracuse the conversion of a snack bar to the School of Social Work administrative offices brought the components of that college together in one location for the first time. It also allowed the demolition of three large residential structures previously housing the offices. An entire basement of 10,000 square feet was reclaimed to provide consolidated space for the university's development office, financial aids office and a business office for student transactions. The kitchen of a dining hall was converted into a consolidated location for the university art collection and the adjacent dining hall converted to use as an art gallery. The former gallery building is being converted into a university bookstore, enabling the demolition of three former residential structures and removal of several storage trailers.

Controlled Maintenance Program. Selecting priorities is probably the most difficult task in evaluating maintenance needs under conditions of steady state or expansion. Under conditions of decline the task is irrational without a system of controlled maintenance. Without a controlled program, decisions concerning which personnel to reduce, what services to curtail, and what level of material purchases to maintain are necessarily made under crisis conditions.

An evaluation of the maintenance program at Syracuse in 1972 showed weaknesses which greatly influenced the effectiveness of the maintenance operation in terms of both service and cost. Major weaknesses were:

1. Lack of recognition of the two major types of maintenance activity -- that is, service calls and definable projects — in the design and application of the planning and control concepts.
2. Lack of sufficient detail and follow-through in translating the broad concepts into operating concepts.
3. Inadequate development and documentation of operating procedures.
4. Inadequate training of the people who work with the system.

Administrators should avoid cutbacks in one important area—preservation of plant—when selecting priorities in planning for reduction in the operation of physical plant.

Correction of these weaknesses has realized an increase in productivity of approximately 20 to 25 percent. The goal is 30 percent with an optimum of 65 percent of the hourly workers' daily time directly engaged on maintenance tasks.

Although controlled maintenance is described in standard texts in the field, there is little guidance on the tasks necessary to convert a crisis- or response-oriented unit into a group acting under regular and planned procedures. The assignment is challenging because of staffs and management already in place. If there is eagerness for improvement and the opportunity to increase productivity, the only catalyst necessary may be a limited amount of consultant time to aid in identifying objectives and recommending appropriate procedures. The institutional staff is the greatest source of knowledge on plant needs and must be part of developing a controlled maintenance program. It is a waste of time and money to purchase a consultant's effort without either the guidance to apply it or the cooperation of the resident staff in the development of the

program. In any context the preparation and implementation of a controlled maintenance program must be results-oriented. The potential achievements for increased productivity is an important part of reduction planning.

Energy Conservation. An element of reduction planning which has been recently raised to high priority is energy conservation. It is not uncommon to find colleges and universities with increases of two to three times in utility bills over 1973, and the soaring costs of energy have greatly contributed to the introduction of reduction planning. Syracuse University has developed a total energy plan that combines preventive maintenance, awareness campaigns, daily operations of physical plant maintenance, an energy management team in the facilities planning office, and selective capital improvement projects. Overall the total energy plan is to make the basic system for the use of energy more efficient, and to realize savings without experiencing curtailment of services.

Most of the conservation activities undertaken at Syracuse are not beyond the reach of anyone responsible for the efficient use of energy in the operation of buildings. Basic activities have followed those of the ACE-APPA-NACUBO Energy Task Force. Typical measures have been reducing the number of air changes, lowering lighting levels, closing off portions of steam loops in summer, additions of clock thermostats, and adding insulation and storm windows. The increased utilization of space and consolidation of facilities have received justification for cost-effectiveness based on anticipated energy savings.

In any context the preparation and implementation of a controlled maintenance program must be results-oriented. The potential achievements for increased productivity is an important part of reduction planning.

A major innovation is the joint development with county government of a resource recovery station for producing steam from burning solid wastes. The university operates a plant and distribution system for a district of institutions and public housing, consuming about 40 percent of production for internal purposes. The proposed plant, to be owned and operated by the county, is scheduled to start construction in 1977 and cost about $50 million. The project will provide a guaranteed source of energy at a predetermined rate on a long-term basis, and free a large amount of natural gas for other local users.

Barrier-Free Environment. A program lately introduced into the overall concept of facilities management is the improvement of access to higher education by the disabled and elderly. Although not a part of reduction planning, proposals to eliminate architectural barriers for the handicapped should have high priority as judgments on curtailments of activities are made. Improvements which can be performed as opportunities arise in the course of normal maintenance activities should not be overlooked.

Budgeting And Budget Controls

Two measures are at the heart of reduction planning: increased productivity and selection of priorities. Increased productivity is dependent on the development of a comprehensive facilities management program and installation of a controlled maintenance program. Selection of priorities occurs in the budgeting process. John D. Young, Assistant Secretary, Department of Health, Education and Welfare, has commented on the budgeting process:

> "There is no objective method of judging priorities among different programs in a central budget organization . . . This process must be done in a political context."

Various budgeting techniques are well documented in sources such as NACUBO's *College and University Business Administration,* or *Accounting for Colleges and Universities.*[2] They include: (1) formula; (2) program; (3) zero base; and (4) incremental. Regardless of the budget technique, there are several approaches to selecting priorities in managing facilities. These are listed below.

Selective Cutbacks. Based on careful analysis of needs for operations, maintenance and preservation of plant, selective cutbacks can also be aided by seasonal adjustment of labor force. Contractual obligations may limit these kinds of measures to gradual accomplishments.

Across-the-Board Percentage Cuts. This type of cut affects all activities by function and for all types of service. It may be essential in an emergency but is not particularly desirable as a sustained response to budget reductions. It requires less study and is likely to be accepted as most equitable of possible techniques.

Consolidation of Activities. Service offered because of traditional practices can be reduced or eliminated to enable staff consolidation on most essential activities. Overlapping and duplication for different types of facilities or departments, such as separately managed housekeeping functions for residential and administrative buildings, should be eliminated.

Staff Flexibility. Some suggestions here are to reduce specialized skills retained on regular staff; contract for services required for unique skills or equipment, or which are performed seasonally; rely on general maintenance skills for basic levels of service and on specialties for tasks involved in preservation of plant.

"Every Tub on its Own Bottom." This technique applies the Harvard University approach of fiscal accountability and cost center budgeting. Full disclosure of centralized budgeting for physical plant maintenance is necessary if services are to be provided through income from

[2] The National Association of College and University Business Officers, *College and University Business Administration* (Washington, D.C.: NACUBO, 1974) and Clarence Scheps and E. E. Davidson, *Accounting for Colleges and Universities* (Baton Rouge, La.: Louisiana State University Press, 1970).

cost centers. Accounting support is essential here to aid in explaining allocations and selection of priorities. A disadvantage is that those cost centers with sound fiscal positions can afford to sustain levels of service and maintain plant while "poor" units deteriorate.

The budget control developed at Syracuse University is based on centralizing the management of operations and maintenance in one location. Cost centers in nonacademic areas budget maintenance as an expense item and it is treated as income for the department of physical plant. Thus, levels of service, materials expenditure, and preservation of plant can be planned for a full year on a fixed budget base. This prevents individual units from arbitrarily reducing maintenance funding part way through a year. Under this procedure it is important that cost centers participate in selecting priorities and that they receive timely and accurate accounting information. Annual forecasts of staff needs are prepared and budgets for labor and materials by hourly employee trades are developed for a fifteen-month period. Distribution of staff on a weekly basis is prepared for three-month periods and monthly revisions are provided.

The refinement of this procedure into daily work schedules and work orders enables close control on the performance of work. Measurements of work productivity are made from this process and are incorporated into schedule revisions. Summary reports are provided on a monthly basis to measure actual expenditures to budgets for expenditures and incomes. Specific allocations of labor and materials are prepared for major cost centers on an annual basis and refined to daily allowances for activity. A monthly review based on summary reports is held with senior administrators by facilities managers, budget managers and accounting representatives. A major benefit of this audit function is the ability to make prompt decisions regarding levels of service and expenditures of materials. Requests for special projects or emergency conditions are quickly evaluated for effects on the budget and the capability to assign staff to the work.

An important management principle is the centralization of all expenditures for plant operation in one source. This fixes accountability and the opportunity for greatest productivity increases through economies of scale. Also, priorities can be based on an overview of all institutional activity rather than on the interests of a single unit. There should be flexibility in operational approaches to handle special conditions. For example, maintenance or custodial units can be set up for efficiency to handle housing, a medical center, or an athletic center.

Conclusion

Earlier, facilities management was described as a comprehensive program to operate, maintain, and preserve the physical plant of an institution. Reduction planning requires guidelines for selection of priorities and increasing productivity. What is stressed here is that reduction planning by across-the-board cuts can be avoided by the installation of a comprehensive facilities management program. With such a program, alternative approaches to budgeting for operations, maintenance, and plant preservation can go forward. A controlled maintenance program which links budgeting with initiating of work and fiscal controls is an essential component for rational reduction planning.

As we move into an era with increased emphasis on accountability, the challenge to administrators will be to rapidly adjust to the changing demands on the educational system. As such, all aspects of the university should be frequently re-examined in light of many new conditions.

Drucker commented on the challenges of management recently:

> "Managing the service institutions for performance will increasingly be seen as the central managerial challenge of a developed society, and as its greatest managerial need."[3]

Reduction planning and managing for decline have created the new era of the manager.

[3] Peter F. Drucker, *Management: Tasks, Responsibilities, Practices* (New York: Harper and Row, 1974).

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